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Mastering Room Acoustics: A Guide to Sound Optimization, now in its seventh edition, is the industry-standard reference for room design and acoustic engineering. This comprehensive guide, written by renowned acoustics expert F. Alton Everest, presents fundamental principles of acoustics alongside practical solutions and detailed designs. The book offers a wealth of information on topics such as: * Controlling sound reflection, absorption, diffraction, and diffusion * Calculating room reflections, reverberation times, and modal resonances * Performing acoustical measurements and site surveys * Choosing construction materials and installing modules for optimal early reflections, reverberation, and diffusion The guide also covers the design and construction of various acoustic-sensitive spaces, including home theaters, project studios, control rooms, recording studios, and more. Additionally, it provides insights on reducing HVAC noise levels, achieving sound isolation, and analyzing the acoustics of concert halls, auditoriums, and places of worship. Furthermore, the book explores the role of psychoacoustics in optimizing room performance and explains how to utilize room acoustics modeling software. It also includes cost-effective plans and specifications for a range of listening and recording rooms. This eBook is available for download on a PC or Mac using Adobe Digital Editions, a free app specifically designed for eBooks. However, please note that the publisher has set limits on how much of this ebook can be printed or copied. Format Information: - {{ format_drm_information.format_name }}: unrestricted - {{ format_drm_information.format_name }}: {{format_drm_information.page_percent}}% pages every day{{format_drm_information.interval}} days - {{ format_drm_information.format_name }} off: read_aloud_information.format_name on The publisher uses cookies to provide the best browsing experience. By clicking "Accept Cookies", you agree to their cookie policy. F. Alton Everest was a renowned expert in acoustics and held various prestigious positions, including emeritus member of the Acoustical Society of America and life fellow of the Society of Motion Picture and Television Engineers. Ken C. Pohlmann is a former director of the Music Engineering Technology program at the University of Miami and Professor Emeritus. He has written numerous articles for Sound & Vision magazine and authored several books, including Principles of Digital Audio. The Master Handbook of Acoustics, Seventh Edition, serves as an industry standard guide to room acoustics, presenting fundamental concepts, time-tested solutions, and detailed room designs. This revised resource combines theoretical instruction with practical engineering advice, providing numerous room designs and new details on listening room and recording studio construction. Designing Sound Spaces: An Integrated Approach to Acoustics covers fundamental principles, acoustical measurements, and construction materials for optimal sound quality. It delves into the analysis of concert halls, auditoriums, and places of worship, as well as the incorporation of psychoacoustics in design. The book also explores room acoustics modeling software and provides cost-effective plans and specifications for various listening and recording rooms. The content is divided into several chapters: - **Chapter 1: Fundamentals of Sound**, which discusses simple harmonic motion, sound in media, particle motion, and the propagation of sound. - **Chapter 2: Sound Levels and the Decibel**, focusing on decibel ratios, acoustic power, and measuring sound-pressure levels. - **Chapter 3: Sound in the Free Field**, exploring free-field conditions, sound divergence, intensity, and pressure in the free field. - **Chapter 4: The Perception of Sound**, examining ear anatomy, sensitivity, loudness control, audibility, and timbre versus spectrum. Key points include localization of sound sources, binaural effects, and perception of reflected sound. - **Chapter 5: Signals, Speech, Music, and Noise**, analyzing sound spectrographs, speech vocal tracts, frequency response, directionality of speech, and the characteristics of noise. Throughout its chapters, "Designing Sound Spaces" integrates theoretical knowledge with practical applications for constructing optimal sound spaces. Reflections, Diffraction, Refraction, and Diffusion in the Field of Auditory Perception and Sound Propagation. **Soundproofing and Acoustic Materials** The effectiveness of various materials in sound absorption and reduction, including: * Glass-fiber materials with different densities * Open-cell foams as sound absorbers * Carpets and their effect on sound absorbance * People and air as natural sound absorbers * Panel (diaphragmatic) and polycylindrical absorbers The role of resonators, such as Helmholtz and volume resonators, in low-frequency absorption and reducing room modes. Additionally, the text discusses: * Absorption module design key points and modal resonances * Room-mode equation and mode calculations * Measuring diffusion efficiency and comparing grating approaches Lastly, it touches upon sound isolation and site selection, including: * Propagation through barriers and airborne noise transmission loss * Site selection considerations for noise survey and measurement Soundproofing Walls: Sound Barriers, Weak Links & STC Ratings ---------- Masonry walls can act as sound barriers, but weak links must be identified. This article discusses floating floors, ceilings, and resilient hangers for improved floor-ceiling construction. Case Study: Footfall Noise and Floor-Ceiling Structures ---------- Key Points: 18 Sound Isolation: Windows & Doors ---------- Single-pane windows, double-pane windows, acoustical holes in glass, and glass spacing are discussed. Laminated glass, plastic panes, slanting the glass, and a third pane cavity absorbent thermal glass are explored. Example of an Optimized Double-Pane Window 19 Noise Control in Ventilating Systems ---------- Selection of noise criteria, fan noise, machinery noise, air velocity, natural attenuation, duct lining, plenum silencers, proprietary attenuators, reactive silencers, and tuned silencers are discussed. Duct location and ASHRAE active noise control are also covered. 20 Acoustics of Listening Rooms & Home Theaters ---------- Playback criteria, planning the playback room, acoustical treatment of playback rooms, peculiarities of small-room acoustics, and modal anomalies are discussed. Bass traps for playback rooms, mid/high-frequency considerations, identification and treatment of reflection points, lateral reflections, and controlling spaciousness are also explored. 21 Acoustics of Home Studios ---------- Home acoustics: modes, home acoustics: reverberation, home acoustics: noise control, home studio budget, and recording in the home studio are discussed. Garage studios and ambient noise requirements are also covered. 22 Acoustics of Small Recording Studios ---------- Acoustical characteristics of small studios, direct and indirect sound, room treatment, room modes, room volume, mode analysis for different room sizes, reverberation time, and diffusion noise are explored. Small studio design example and absorption design goal are discussed. 23 Acoustics of Large Recording Studios ---------- Design criteria of a large studio, floor plan, wall sections, drum booth, vocal booth, sound-lock corridor, and reverberation time are covered. 24 Acoustics of Control Rooms ---------- Initial time-delay gap, live end–dead end specular, and control room design considerations are discussed. versus Diffusion Low-Frequency Resonances in Control Rooms Initial Time-Delay Gaps in Practice Loudspeaker Placement, Reflection Paths, and Near-Field Monitoring Get access to cutting-edge designs and performance analyses for various acoustically sensitive spaces like recording studios, home theaters, and more. This edition brings new details on constructing listening rooms and voice studios, as well as video teleconferencing rooms. Learn how to: * Optimize room sound with reflection, absorption, diffraction, and diffusion * Calculate room reflections, reverberation times, and modal resonances * Perform acoustical measurements and site surveys * Choose the right construction materials Discover how to reduce HVAC noise levels and achieve excellent sound isolation using proven designs. Analyze concert hall acoustics and optimize room performance with psychoacoustic principles. Understand room acoustics modeling software and utilize cost-effective plans for various listening and recording rooms. Written by renowned experts Ken C. Pohlmann and F. Alton Everest, this comprehensive guide is perfect for professionals in the audio industry and enthusiasts alike. #### Details ISBN: 9781260473599 ISBN-10: 1260473597 Publisher: McGraw Hill Tab Publication Date: September 9th, 2021 Pages: 656 Language: English